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Forestry Canada - Maritimes Region

TECHNICAL NOTE

ORNAMENTAL TREES AND ABIOTIC INJURY

A guide for the tree owner

Ornamental trees can have a difficult time surviving in the modern world. Trees along streets and highways are regularly exposed to road salt, exhaust fumes, and physical injuries from vehicles. Trees around our homes also suffer and the most common causes are a variety of abiotic injuries.

What are Abiotic injuries?

Abiotic injuries include such diverse things as winter drying, salt damage, herbicide injury, soil compaction, faulty planting, snow damage, frost, and pollution. Each occurs without a visible causal agent, such as an insect or disease. They are very common in both urban and rural areas. They also pose the most difficult identification problems for the Forest Insect and Disease Survey (FIDS).

Some abiotic injuries, like faulty planting, herbicide injury, and physical injuries, are preventable. Others, such as winter drying, frost damage or ocean salt spray, are serious problems at some locations and remedies may be costly, time consuming or simply impractical.

Although the causes of abiotic injuries are very different, the damage produced by them may be identical. It is the pattern of damage on the affected tree and the surrounding trees, as well as a description of the site which give essential information to help separate the look-alikes.

What information is needed ?

Collectors submitting samples from ornamental trees **without insects** should give the laboratory as much information as they can about the affected trees. By sending notes with the sample, the collector will receive faster service and minimize requests for additional information.

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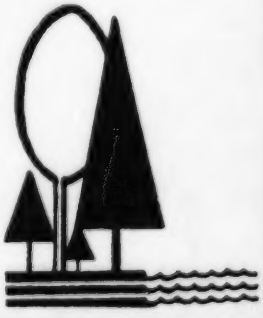

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The pattern of damage on individual trees **and** the pattern of damage on surrounding trees or shrubs is especially helpful. Tell us whether the problem is uniform on all branches on all trees or if the sample is the one damaged branch on many trees. Is only one type of tree injured or are different kinds affected?

It is very important to tell us if the symptoms followed application of herbicide, insecticide or fertilizer, or if nothing has been applied.

An example of complete notes:

> One of a row planted about ten years ago along Trans Canada Highway. The side next to the highway is most seriously affected on all the trees with sheltered side only slightly browned. Injured shoots extend from top down to snow line with lowest branches unaffected. No new landscaping or fill added under trees. Trees sprayed last year for aphid (give chemical and amount used). Fertilizer-herbicide mixture used on lawn for weeds; not applied under trees (give amount).

COUNTS ARE ESPECIALLY HELPFUL, such as:
Present on 5 of 10 trees and about 10% of shoots affected.

How can the collector make problems easier to identify?

1. DO NOT SHIP SAMPLES IN PLASTIC BAGS. They usually mold en route. Leaf samples should be placed in newspaper between two sheets of cardboard. Larger samples can be shipped in cardboard boxes.

2. INCLUDE DETAILED NOTES WITH YOUR SAMPLE (see above). Remember, if you don't provide information about sprays and fertilizers used and how they were applied, it may be impossible to separate these look-alikes from salt damage or winter drying in the laboratory.

How to minimize abiotic problems.

1. **Protect trees from stress.** Transplant with care, water thoroughly, and ensure the tree is kept thoroughly watered during dry periods. Don't use fertilizers, herbicides, and insecticides around newly planted trees until they are properly established. Shelter sensitive ornamentals against winter drying, salt or sunscald. Water older trees during dry periods.

2. **Follow recommended dosages exactly when applying fertilizer, herbicides, and insecticides.** Exceeding recommended dosages can kill or injure trees.

3. **Avoid tree injuries.** Wounds allow insects and wood rot fungi to enter the tree and weaken it until it is a hazard to both nearby property and people.

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